CERTIFIED MAIL 7018 3090 0001 9999 0245

September 30, 2019

Air and Radiation Division
U. S. Environmental Protection Agency, Region V
77 West Jackson Boulevard,
Chicago, IL 60604

Re: Submittal of U. S. Steel – Minntac and Keetac Compliance Reports per the Requirements of 40 CFR Part 52.1235(e)(5) through (7) – Taconite Regional Haze FIP

U. S. Steel – Keetac (Keetac)

Keetac utilizes Ametek Model 920 analyzers to measure NOx and SO_2 (Serial Number AE-920-10086-1).

Keetac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 3rd quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO2 is 225 lbs/hr – 30 day rolling average. There were no deviations associated with the emission limit.

The emission limitation for NOx became effective on September 8, 2019 and is 1.5 lbs/MMBtu based on a 30-day rolling average. However, for any 30 or more consecutive days when only natural gas is used, a limit of 1.2 lbs/MMBtu applies. Refer to attachment 1.

The last CEMS CGA was conducted on September 5, 2019 and is included in this submittal. The last CEMS RATA was conducted on March 19, 2019 and was previously submitted.

U. S. Steel – Minntac (Minntac)

Minntac utilizes Ametek Model 920 analyzers to measure NOx and SO_2. The table below outlines the serial numbers for each of the units:

Line 3	AE-920-10086-1
Line 4	AE-920-10086-2
Line 5	AE-920-10086-3
Line 6	ZA-920-10336-1

Line 7	ZA-920-10336-2

Minntac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 3rd quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO_2 is a 30-day rolling average aggregate limit for indurating lines 3-7 of 498 lbs/hr when all lines are producing flux pellets, 630 lbs/hr when producing acid pellets or using the equation in 40 CFR 52.1235(b)(2)(iii) when the 30 day period includes both acid and flux pellet production. There were no deviations associated with the emission limit.

The emission limitation for NOx on Lines 4, 6 and Line 7 is 1.5 lbs/MMBtu based on a 30-day rolling average. However, for any 30 or more consecutive days when only natural gas is used, a limit of 1.2 lbs/MMBtu applies. There were no deviations associated with the emission limit for Lines 4, 6 and Line 7.

The latest CEMS RATA was conducted on Lines 3-7 on May 15-16 and May 20-22, 2019. This report was submitted on July 10, 2019. The last CGAs were performed on August 21-22, 2019 and are included in this report.

If you should require any additional information, please contact me at scampbell@uss.com or 218-778-8684.

Sincerely,

Stephani Campbell

Stephani Campbell
Environmental Control

U. S. Steel Corporation
Minnesota Ore Operations
P.O. Box 217
Keewatin, MN 55753

CERTIFIED MAIL 7018 3090 0001 9999 0238

October 29, 2019

Air Quality Compliance Tracking Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: U. S. Steel – Keetac Administrative Order by Consent
Quarterly Continuous Monitoring System Deviation Report

Dear Supervisor:

Enclosed with this letter is U. S. Steel – Keetac's (Keetac) Quarterly Continuous Emission Monitoring System Deviation report for the 3rd quarter of 2019. The Continuous Emission Monitoring System (CEMS) was certified on Keetac's Waste Gas Stack on November 6th, 2008. The CEMS was installed as a part of Keetac's Administrative Order by Consent with the State of Minnesota effective September 27th, 2007.

Deviations associated with Emission Limits

There was one deviation associated with emission limits.

Deviations associated with Monitor Downtime

There were fifteen instances of monitor downtime that affected either NO_x or SO_2. The individual downtime duration and cause is listed in the monitor downtime section of this report.

Deviations associated with Monitor Bypass

Keetac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500 °F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed

such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any NO_x and SO_2 are emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lawrence Sutherland
General Manager
U. S. Steel - Minnesota Ore Operations

Enclosure

cc: Steve Palzkill – MPCA
File

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Excess Emissions Reporting Form - DRF-1

Continuous Monitoring Systems Reporting Form

Please note: This form has been updated. Please print, complete and remit only the forms. Please see the instructions in the Word version of DRF-1 to ensure proper use and understanding of definitions. DO NOT print and return the instructions.

Use this form to record and report excess emissions (EE) that are identified by *Continuous Monitoring Systems.* This includes Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS). DRF-1 is the form you must use to report excess emissions from a stack as recorded by your facility's Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS).

Address hard copy

Compliance Tracking Coordinator, Fourth Floor
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

1) General Facility Information

Company name: U. S. Steel - Keetac

AQ file no.: 62B

AQ permit no.: 13700063-005

Report covers Quarter: Third

Year: 2019

2) CEMS/COMS Data Summary Table

				Duration of Monitor Downtime		Duration of Excess Emissions (EE)			
2a) Monitor ID Number	2b) Monitor ID Pollutant	2c) EU/SV ID Number	2d) Total Operating Time (TOT) (hr)	3i) Total Duration of Monitor Downtime (hr)	2e) Downtime % Of TOT	4l) Cumulative Duration of Exempt EE	2f) Exempt EE % of TOT	4m) Cumulative Total Duration of All EE	2g) Total EE % of TOT
Line 2	NOx	SV 051	2205	6	0.3%	N/A	N/A	0	0.00%
Line 2	SO2	SV 051	2205	14	0.6%	N/A	N/A	1	0.05%

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Monitor ID Pollutant or Parameter	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (min)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 2	SO2	SV 051	07/08/2019 05:00:00	07/08/2019 05:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	07/08/2019 06:00:00	07/08/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	07/08/2019 07:00:00	07/08/2019 12:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	07/29/2019 06:00:00	07/29/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	08/07/2019 06:00:00	08/07/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	08/13/2019 06:00:00	08/13/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	08/30/2019 06:00:00	08/30/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	08/30/2019 10:00:00	08/30/2019 10:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	09/03/2019 06:00:00	09/03/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	07/29/2019 06:00:00	07/29/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	08/07/2019 06:00:00	08/07/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	08/13/2019 06:00:00	08/13/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	08/30/2019 06:00:00	08/30/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	08/30/2019 10:00:00	08/30/2019 10:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 2	NOx	SV 051	09/03/2019 06:00:00	09/03/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance

3i) Total duration of downtime: 20 **hours**

*Opacity time listed in minutes

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission

4a) Emission Unit ID Number	4b) Monitor ID Number	4c) Pollutant or Parameter Monitored	4d) Beginning Date and Time of EE	4e) End Date and Time of EE	4f) Limit and Averaging Period	4g) Highest Reading of EE with Units (example: 5 lb/hr, etc)	4h) Duration of Exempt EE (include these entries as part of 4i)	4i) Total Duration of All EE	4j) Cause of EE (clarifying comments)	4k) Corrective Action Taken (clarifying comments)
SV051	CM001	NOx	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV051	CM005	SO2	7/17/2019 15:00	7/17/2019 15:59	290 lb - 1Hr	298 lb/hr	0	1	EE occurred due to lime pump cavatating and time for the 2nd lime pump to respond and increase the pH.	Short term, the second lime pump was started. Long term both lime pumps were replaced.
				4l) Cumulative Duration of Exempt Excess Emissions:			0		4m) Cumulative Total Duration	1 Hrs

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	7/11/2019 8:27	7/11/2019 8:31	4	Yes	4	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/16/2019 17:24	7/16/2019 17:47	23	Yes	23	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/16/2019 17:48	7/16/2019 17:51	3	Yes	3	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/18/2019 9:45	7/18/2019 12:52	187	Yes	187	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/19/2019 9:23	7/19/2019 10:43	80	Yes	80	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/19/2019 21:12	7/20/2019 1:01	229	Yes	229	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/25/2019 19:17	7/25/2019 20:35	78	Yes	78	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/28/2019 13:40	7/28/2019 14:03	24	Yes	24	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	7/29/2019 7:06	7/29/2019 8:04	57	Yes	57	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/7/2019 7:01	8/7/2019 7:06	5	Yes	5	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/7/2019 7:07	8/7/2019 7:23	16	Yes	16	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/7/2019 7:23	8/7/2019 13:00	337	Yes	337	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/7/2019 13:00	8/7/2019 14:27	87	Yes	87	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/10/2019 20:03	8/10/2019 20:47	44	Yes	44	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/11/2019 11:52	8/11/2019 13:00	68	Yes	68	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/11/2019 13:00	8/11/2019 16:51	231	Yes	231	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/11/2019 20:04	8/11/2019 21:00	56	Yes	56	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/11/2019 21:00	8/11/2019 23:14	134	Yes	134	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/11/2019 23:15	8/11/2019 23:25	10	Yes	10	Bypass necessary to protect plant equipment	N/A

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	8/12/2019 0:25	8/12/2019 4:00	215	Yes	215	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/12/2019 19:40	8/12/2019 19:59	19	Yes	19	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/12/2019 22:59	8/13/2019 5:00	361	Yes	361	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/13/2019 5:00	8/13/2019 9:29	269	Yes	269	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/13/2019 12:17	8/13/2019 12:45	28	Yes	28	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/19/2019 7:50	8/19/2019 7:58	8	Yes	8	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/23/2019 13:43	8/23/2019 21:00	437	Yes	437	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/23/2019 21:00	8/23/2019 21:21	21	Yes	21	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/23/2019 22:22	8/24/2019 5:00	398	Yes	398	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/24/2019 5:00	8/24/2019 6:52	112	Yes	112	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/24/2019 8:41	8/24/2019 13:00	259	Yes	259	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/24/2019 13:00	8/24/2019 18:02	303	Yes	303	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/25/2019 13:22	8/25/2019 13:35	14	Yes	14	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/26/2019 14:38	8/26/2019 14:57	18	Yes	18	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/27/2019 16:37	8/27/2019 16:40	4	Yes	4	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/27/2019 16:41	8/27/2019 16:42	2	Yes	2	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/30/2019 4:22	8/30/2019 5:00	38	Yes	38	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/30/2019 5:00	8/30/2019 10:33	333	Yes	333	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	8/31/2019 15:02	8/31/2019 15:31	29	Yes	29	Bypass necessary to protect plant equipment	N/A

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	8/31/2019 18:59	8/31/2019 20:07	68	Yes	68	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/1/2019 1:44	9/1/2019 2:21	37	Yes	37	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/1/2019 2:48	9/1/2019 5:00	132	Yes	132	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/1/2019 9:45	9/1/2019 10:24	39	Yes	39	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/1/2019 13:13	9/1/2019 13:18	5	Yes	5	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/3/2019 4:44	9/3/2019 5:00	16	Yes	16	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/3/2019 5:00	9/3/2019 13:00	480	Yes	480	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/3/2019 13:00	9/3/2019 20:20	440	Yes	440	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/6/2019 20:27	9/6/2019 21:00	33	Yes	33	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/6/2019 21:00	9/6/2019 21:15	15	Yes	15	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/15/2019 23:16	9/15/2019 23:31	15	Yes	15	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/18/2019 15:29	9/18/2019 17:50	141	Yes	141	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/18/2019 18:02	9/18/2019 19:19	77	Yes	77	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/19/2019 8:39	9/19/2019 13:00	261	Yes	261	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/19/2019 13:00	9/19/2019 14:07	67	Yes	67	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/21/2019 16:35	9/21/2019 17:09	34	Yes	34	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/22/2019 20:03	9/22/2019 21:00	57	Yes	57	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/22/2019 21:00	9/22/2019 21:35	35	Yes	35	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/26/2019 11:32	9/26/2019 13:00	88	Yes	88	Bypass necessary to protect plant equipment	N/A

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (min)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass (min)	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	9/26/2019 13:00	9/26/2019 14:10	70	Yes	70	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/26/2019 17:15	9/26/2019 21:00	225	Yes	225	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/26/2019 21:00	9/26/2019 22:31	91	Yes	91	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/26/2019 22:32	9/26/2019 22:49	17	Yes	17	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/26/2019 23:12	9/26/2019 23:21	10	Yes	10	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/27/2019 0:43	9/27/2019 2:31	109	Yes	109	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/27/2019 2:32	9/27/2019 2:43	12	Yes	12	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/27/2019 7:32	9/27/2019 9:53	140	Yes	140	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/27/2019 11:46	9/27/2019 13:00	74	Yes	74	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/27/2019 13:00	9/27/2019 15:02	122	Yes	122	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	9/30/2019 15:17	9/30/2019 15:22	5	Yes	5	Bypass necessary to protect plant equipment	N/A

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)

5k) Total duration of allowable monitor bypass: 124 hours

COMS audits

Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								

Cylinder gas audit's (CGA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV051/EU030	2205	CM001	NOx	9/5/2019	Low 0.77% Mid 0.41%	Pass	12/31/2019	
SV051/EU030	2205	CM005	SO2	9/5/2019	Low 4.15% Mid 3.58%	Pass	12/31/2019	

Linearity

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A					Low Mid High			

Relative accuracy test audit (RATA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV051		CM001	NOx	3/19/2019	9.4%	Pass	3/31/2020	
SV051		CM005	SO2	3/19/2019	6.4%	Pass	3/31/2020	

6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of Responsible Official

Lawrence Sutherland
Printed Name of Responsible Official

General Manager- Minnesota Ore
Title

Oct 29, 2019
Date

CGA Test Report

Facility Name: US Steel KeeTac

Location: ,

NOX WGS Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AE-920-10086-1

Test Date: 9/5/2019

Tester: NICHOLAS WILSON

Analyzer Span: 600.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(120.000 PPMW - 180.000 PPMW)	(300.000 PPMW - 360.000 PPMW)
Concentration	130.000	324.000
Cylinder No	CC422243	CC322615
Expiration Date	2/24/2021	8/30/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	10:17	131.000	10:20	326.000
Run 2	11:17	131.000	11:20	325.000
Run 3	12:17	131.000	12:20	325.000
Avg Monitor Response		131.000		325.333
Calibration Error		0.77		0.41
Absolute Diff		1.000		1.333
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel KeeTac

Location: ,

SO2 WGS Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AE-920-10086-1

Test Date: 9/5/2019

Tester: NICHOLAS WILSON

Analyzer Span: 250.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(50.000 PPMW - 75.000 PPMW)	(125.000 PPMW - 150.000 PPMW)
Concentration	62.600	141.400
Cylinder No	CC168937	SG9169308BAL
Expiration Date	11/8/2020	10/22/2020

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	08:07	60.000	08:10	137.000
Run 2	09:07	60.000	09:10	136.000
Run 3	10:07	60.000	10:10	136.000
Avg Monitor Response		60.000		136.333
Calibration Error		4.15		3.58
Absolute Diff		2.600		5.067
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

Summary Table by Monitor Downtime Type
U. S. Steel - Keetac
3rd Quarter 2019

NOx

Line	Duration (Hrs)	Description
Line 2	5	Automatic Calibration
	0	Data Handling System Malfunction
	1	Sample Interface Malfunction
	0	Excess Drift Primary Analyzer
	0	Primary Analyzer Malfunction
	0	Preventative Maintenance

SO2

Line	Duration (Hrs)	Description
Line 2	6	Automatic Calibration
	0	Data Handling System Malfunction
	1	Sample Interface Malfunction
	0	Excess Drift Primary Analyzer
	7	Primary Analyzer Malfunction
	0	Preventative Maintenance

Attachment 1 - Duration of Excess Emissions Table

Emission Unit ID	Monitor ID	Pollutant	Date of EE	Beginning and end time of EE	Magnitude of the EE	Cause of EE	Corrective or Preventative Actions Taken
SV051	CM001	NOx	9/8/19-9/30/19	Daily- 9/8/19-9/30/19	NOx emissions have not increased at U. S. Steel - Keetac. The applicable limit is significantly lower than Keetac's historic emissions – using good combustion practices. Because the FIP limit is significantly more stringent than the existing state standard, the emissions at Keetac, despite good combustion practices are substantially higher than the existing FIP limit.	The USEPA Federal Implementation Plan for Regional Haze for Keetac which established significantly more stringent limits became effective on September 8, 2019. This limit is currently under judicial review in the U.S. Court of Appeals for the Eighth Circuit in which U. S. Steel has challenged the technological and economical feasibility of the limit. There is also ongoing mediation between U. S. Steel and USEPA to resolve that case and to develop revised NOx limits.	U. S. Steel – Keetac is actively in mediation with USEPA regarding the FIP NOx limits. During this mediation process, U. S. Steel has completed studies regarding Keetac emissions in an effort to reach resolution. USEPA is reviewing these materials. In the meantime, U. S. Steel – Keetac is relying on good combustion practices to minimize emissions while avoiding impacts to safety and pellet quality.
SV051	CM005	SO2	N/A	N/A	N/A	N/A	N/A

CERTIFIED MAIL 7018 3090 0001 9999 0221

October 29, 2019

Air Quality Compliance Tracking Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: United States Steel Corporation, Minnesota Ore Operations – Minntac
Air Emissions Permit No. 13700005-006
Quarterly Continuous Monitoring System Deviation Report

Dear Supervisor:

Enclosed with this letter is U. S. Steel – Minntac's (Minntac) Quarterly Excess Emissions Reporting Form for the 3rd quarter of 2019. NOx/SO_2 Continuous Emission Monitoring Systems (CEMS) are certified on all Agglomerator Waste Gas Lines.

Deviations associated with Emission Limits

There were no deviations during the 3rd quarter of 2019.

Deviations associated with Monitor Downtime

There were 102 instances of monitor downtime for either NOx or SO_2. The individual downtime durations and causes are listed in the monitor downtime section of this report.

Deviations associated with Monitor Bypass

Minntac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500°F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any NO_x or SO_2 is emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lawrence Sutherland
General Manager – Minnesota Ore Operations

Enclosure

cc: Steve Palzkill – MPCA
File

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

DRF-1

Excess Emissions Reporting Form

Air Quality Permit Program

Doc Type: Excess Emission Report

Note: Please complete, and remit **only** the forms. Please see the instructions to ensure proper use and understanding of definitions.
Do not print and return the instructions.

General Information about Deviation and Compliance Reporting

If your permit requires you to submit deviation reports or an annual compliance certification, you should use the Deviation Reporting Forms (DRFs) and Annual Compliance Certification Report (CR-04), unless you get Minnesota Pollution Control Agency (MPCA) approval to use another format or your facility's permit specifies otherwise. There are two separate DRF forms: DRF-1 and DRF-2.

DRF-1 is used to report direct excess stack emissions (EE) recorded by Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems
DRF-2 is used to report deviations recorded by periodic monitoring systems, deviations of permitted operating conditions and surrogate parameters whether recorded
Some examples: flow rate, temperature, throughput, control equipment operating parameters, fuel-use records
CR-04: is used to report facility compliance status at the end of each year if required by your permit.

Address hard copy report submittals to: Air Compliance Tracking Coordinator, Minnesota Pollution Control Agency
520 Lafayette Road North, St. Paul, Minnesota 55155-4195

Or e-mail a signed and scanned PDF copy to: AQRoutineReport.PCA@state.mn.us
(see e-mail instructions in "Routine Air Report Instructions Letter" at:
http://www.pca.state.mn.us/nwqh472

1) General Facility Information

Facility name: United States Steel Corporation, Minnesota Ore Operations, Minntac
AQ file no.: 26A
County: St. Louis
AQ permit #: 13700005
Report covers quarter: Third
Year: 2019

2) CEMS/COMS Data Summary Table

				Duration of Monitor Downtime		Duration of Excess Emissions (EE)			
2a) Monitor ID Number	2b) Monitor ID Pollutant	2c) EU/SV ID Number	2d) Total Operating Time (TOT)	3l) Total Duration of Monitor Downtime (hr)	2e) **Downtime % Of TOT**	4l) Cumulative Duration of Exempt EE	2f) **Exempt EE % of TOT**	4m) Cumulative Total Duration of All EE	2g) **Total EE % of TOT**
MR 001	NOx	SV-103	2120	10	**0.5%**	0	**0%**	0	**0%**
MR 002	NOx	SV-118	2084	9	**0.4%**	0	**0%**	0	**0%**
MR 003	NOx	SV-127	2104	11	**0.5%**	0	**0%**	0	**0%**
MR 004	NOx	SV-144	2156	45	**2.1%**	0	**0%**	0	**0%**
MR 005	NOx	SV-151	2165	51	**2.4%**	0	**0%**	0	**0%**
MR 001	SO2	SV-103	2120	22	**1.0%**	0	**0%**	0	**0%**
MR 002	SO2	SV-118	2084	9	**0.4%**	0	**0%**	0	**0%**
MR 003	SO2	SV-127	2104	11	**0.5%**	0	**0%**	0	**0%**
MR 004	SO2	SV-144	2156	46	**2.1%**	0	**0%**	0	**0%**
MR 005	SO2	SV-151	2165	51	**2.4%**	0	**0%**	0	**0%**

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 3	NOx	SV103	07/11/2019 05:00:00	07/11/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	08/04/2019 05:00:00	08/04/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	08/04/2019 06:00:00	08/04/2019 08:59:00	180	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	08/26/2019 12:00:00	08/26/2019 14:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	09/12/2019 05:00:00	09/12/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	09/20/2019 08:00:00	09/20/2019 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	07/11/2019 05:00:00	07/11/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	07/29/2019 11:00:00	07/29/2019 11:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	08/04/2019 05:00:00	08/04/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	08/04/2019 06:00:00	08/04/2019 08:59:00	180	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	08/20/2019 19:00:00	08/21/2019 04:59:00	600	Sample Interface Malfunction	Performed necessary maintenance
Line 3	SO2	SV103	08/21/2019 05:00:00	08/21/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	08/26/2019 12:00:00	08/26/2019 14:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	SO2	SV103	09/12/2019 05:00:00	09/12/2019 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	09/20/2019 08:00:00	09/20/2019 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	07/02/2019 06:00:00	07/02/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	08/13/2019 06:00:00	08/13/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	08/26/2019 12:00:00	08/26/2019 14:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	NOx	SV118	08/27/2019 06:00:00	08/27/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	08/29/2019 06:00:00	08/29/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	08/30/2019 06:00:00	08/30/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	09/13/2019 06:00:00	09/13/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	07/02/2019 06:00:00	07/02/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	08/13/2019 06:00:00	08/13/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	08/26/2019 12:00:00	08/26/2019 14:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	08/27/2019 06:00:00	08/27/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	08/29/2019 06:00:00	08/29/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	08/30/2019 06:00:00	08/30/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	09/13/2019 06:00:00	09/13/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	07/24/2019 06:00:00	07/24/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	07/29/2019 14:00:00	07/29/2019 18:59:00	300	Sample Interface Malfunction	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 5	NOx	SV127	08/26/2019 12:00:00	08/26/2019 14:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	09/12/2019 06:00:00	09/12/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	09/19/2019 11:00:00	09/19/2019 11:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	07/24/2019 06:00:00	07/24/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	07/29/2019 14:00:00	07/29/2019 18:59:00	300	Sample Interface Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	08/26/2019 12:00:00	08/26/2019 14:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	09/12/2019 06:00:00	09/12/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	09/19/2019 11:00:00	09/19/2019 11:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	07/01/2019 00:00:00	07/01/2019 04:59:00	300	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	07/24/2019 09:00:00	07/24/2019 11:59:00	180	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	08/03/2019 21:00:00	08/04/2019 05:59:00	540	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	08/04/2019 06:00:00	08/04/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	08/04/2019 07:00:00	08/04/2019 08:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	08/04/2019 10:00:00	08/04/2019 19:59:00	600	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	08/15/2019 06:00:00	08/15/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	08/20/2019 10:00:00	08/20/2019 10:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	08/21/2019 06:00:00	08/21/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	08/21/2019 07:00:00	08/21/2019 16:59:00	600	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	08/28/2019 06:00:00	08/28/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	08/30/2019 07:00:00	08/30/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	07/01/2019 00:00:00	07/01/2019 04:59:00	300	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	07/24/2019 09:00:00	07/24/2019 11:59:00	180	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	08/03/2019 21:00:00	08/04/2019 05:59:00	540	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	08/04/2019 06:00:00	08/04/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	08/04/2019 07:00:00	08/04/2019 08:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	08/04/2019 10:00:00	08/04/2019 19:59:00	600	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	08/15/2019 06:00:00	08/15/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	08/20/2019 10:00:00	08/20/2019 10:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	08/21/2019 06:00:00	08/21/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	08/21/2019 07:00:00	08/21/2019 16:59:00	600	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	08/28/2019 06:00:00	08/28/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	08/30/2019 07:00:00	08/30/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	09/12/2019 06:00:00	09/12/2019 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	07/01/2019 00:00:00	07/01/2019 04:59:00	300	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	07/02/2019 07:00:00	07/02/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective Action Taken (clarifying comments)
Line 7	NOx	SV151	07/02/2019 10:00:00	07/02/2019 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	07/10/2019 11:00:00	07/10/2019 11:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	07/12/2019 07:00:00	07/12/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	07/24/2019 09:00:00	07/24/2019 11:59:00	180	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	08/03/2019 21:00:00	08/04/2019 05:59:00	540	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	08/04/2019 06:00:00	08/04/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	08/04/2019 08:00:00	08/04/2019 08:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	08/04/2019 10:00:00	08/04/2019 13:59:00	240	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	08/04/2019 14:00:00	08/04/2019 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	08/04/2019 15:00:00	08/04/2019 19:59:00	300	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	08/20/2019 06:00:00	08/20/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	08/21/2019 06:00:00	08/21/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	08/21/2019 08:00:00	08/21/2019 15:59:00	480	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	08/21/2019 16:00:00	08/21/2019 16:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	09/01/2019 07:00:00	09/01/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	09/11/2019 19:00:00	09/11/2019 19:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	09/12/2019 06:00:00	09/12/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	07/01/2019 00:00:00	07/01/2019 04:59:00	300	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	07/02/2019 07:00:00	07/02/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	07/02/2019 10:00:00	07/02/2019 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	07/10/2019 11:00:00	07/10/2019 11:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	07/12/2019 07:00:00	07/12/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	07/24/2019 09:00:00	07/24/2019 11:59:00	180	Secondary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	08/03/2019 21:00:00	08/04/2019 05:59:00	540	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	08/04/2019 06:00:00	08/04/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	08/04/2019 08:00:00	08/04/2019 08:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	08/04/2019 10:00:00	08/04/2019 13:59:00	240	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	08/04/2019 14:00:00	08/04/2019 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	08/04/2019 15:00:00	08/04/2019 19:59:00	300	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	08/20/2019 06:00:00	08/20/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	08/21/2019 06:00:00	08/21/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	08/21/2019 08:00:00	08/21/2019 15:59:00	480	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	08/21/2019 16:00:00	08/21/2019 16:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	09/01/2019 07:00:00	09/01/2019 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	09/11/2019 19:00:00	09/11/2019 19:59:00	60	Automatic Calibration	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 7	SO2	SV151	09/12/2019 06:00:00	09/12/2019 07:59:00	120	Automatic Calibration	Performed necessary maintenance
				3i) Total duration of downtime:	**265**	**hours**	

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission identified by a monitor. Make a separate table for each monitor, as needed.

4a) Emission Unit ID Number	4b) Monitor ID Number	4c) Pollutant or Parameter Monitored	4d) Beginning Date and Time of EE	4e) End Date and Time of EE	4f) Limit and Averaging Period	4g) Highest Reading of EE with Units (example: 5 lb/hr, etc)	4h) Duration of Exempt EE (include these entries as part of 4i)	4i) Total Duration of All EE	4j) Cause of EE (clarifying comments)	4k) Corrective Action Taken (clarifying comments)
SV-103	MR 001	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-118	MR 002	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-127	MR 003	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-144	MR 004	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-151	MR 005	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
						4l) Cumulative Duration of Exempt Excess Emissions:		0	**4m) Cumulative Total**	0

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 3	SV103	NOx/SO2	7/2/19 8:34	7/2/19 13:04	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/9/19 23:56	7/10/19 0:59	63	YES	63	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/10/19 17:59	7/10/19 19:00	61	YES	61	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/10/19 19:00	7/10/19 22:30	210	YES	210	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/10/19 22:30	7/11/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/11/19 6:30	7/11/19 7:00	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/11/19 7:00	7/11/19 14:30	450	YES	450	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/11/19 14:30	7/11/19 16:13	103	YES	103	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/11/19 16:31	7/11/19 19:00	149	YES	149	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/11/19 19:00	7/11/19 22:01	181	YES	181	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/17/19 22:11	7/17/19 22:30	19	YES	19	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/17/19 22:30	7/17/19 23:07	37	YES	37	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/25/19 19:15	7/25/19 19:34	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	7/25/19 19:38	7/25/19 19:56	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	8/13/19 3:03	8/13/19 4:54	111	YES	111	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	8/16/19 8:06	8/16/19 8:12	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/6/19 16:26	9/6/19 17:27	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/8/19 22:58	9/8/19 23:59	61	YES	61	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/11/19 22:59	9/12/19 6:30	451	YES	451	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (minutes)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 3	SV103	NOx/SO2	9/12/19 6:30	9/12/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/12/19 7:00	9/12/19 14:30	450	YES	450	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/12/19 14:30	9/12/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/12/19 19:00	9/12/19 20:57	118	YES	118	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/20/19 22:30	9/20/19 22:45	15	YES	15	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/20/19 19:00	9/20/19 22:30	211	YES	211	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	9/20/19 22:30	9/20/19 22:45	15	YES	15	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/1/19 3:02	7/1/19 3:59	57	YES	57	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/1/19 17:59	7/1/19 22:30	271	YES	271	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/1/19 22:30	7/2/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/2/19 6:30	7/2/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/2/19 7:00	7/2/19 10:36	216	YES	216	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/2/19 10:56	7/2/19 12:27	91	YES	91	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/18/19 13:45	7/18/19 14:19	34	YES	34	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/20/19 2:41	7/20/19 3:52	71	YES	71	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/20/19 3:57	7/20/19 4:00	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/25/19 19:59	7/25/19 20:07	9	YES	9	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/29/19 20:29	7/29/19 22:10	101	YES	101	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	7/30/19 15:53	7/30/19 16:09	17	YES	17	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 4	SV118	NOx/SO2	8/1/19 8:52	8/1/19 9:52	60	YES	60	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/8/19 9:52	8/8/19 11:24	91	YES	91	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/12/19 20:21	8/12/19 22:30	129	YES	129	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/12/19 22:30	8/13/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/13/19 6:30	8/13/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/13/19 7:00	8/13/19 14:30	450	YES	450	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/13/19 14:30	8/13/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/13/19 19:00	8/13/19 20:19	80	YES	80	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/27/19 4:38	8/27/19 6:30	112	YES	112	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/27/19 6:30	8/27/19 7:00	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/27/19 7:00	8/27/19 8:11	72	YES	72	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/27/19 14:59	8/27/19 15:59	60	YES	60	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/28/19 19:59	8/28/19 22:30	151	YES	151	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/28/19 22:30	8/29/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/29/19 6:30	8/29/19 7:00	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/29/19 7:00	8/29/19 14:30	450	YES	450	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/29/19 14:30	8/29/19 15:07	37	YES	37	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/30/19 3:31	8/30/19 6:30	179	YES	179	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/30/19 6:30	8/30/19 7:00	29	YES	29	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 4	SV118	NOx/SO2	8/30/19 7:00	8/30/19 8:07	68	YES	68	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	8/30/19 15:27	8/30/19 16:22	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/8/19 20:58	9/8/19 21:59	61	YES	61	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/12/19 7:59	9/12/19 14:30	691	YES	691	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/12/19 14:30	9/12/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/12/19 19:00	9/12/19 22:30	211	YES	211	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/12/19 22:30	9/13/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/13/19 6:30	9/13/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/13/19 7:00	9/13/19 12:04	305	YES	305	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/19/19 21:32	9/19/19 21:45	13	YES	13	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/20/19 13:51	9/20/19 14:30	39	YES	39	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/20/19 14:30	9/20/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/20/19 19:00	9/20/19 20:09	69	YES	69	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/29/19 7:29	9/29/19 7:46	17	YES	17	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	9/29/19 7:50	9/29/19 7:56	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/1/19 8:07	7/1/19 8:27	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/2/19 8:34	7/2/19 12:12	218	YES	218	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/2/19 13:51	7/2/19 14:29	38	YES	38	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/9/19 1:22	7/9/19 1:59	37	YES	37	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	7/9/19 6:59	7/9/19 14:30	451	YES	451	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/9/19 14:30	7/9/19 15:09	39	YES	39	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/14/19 3:25	7/14/19 4:38	72	YES	72	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/22/19 23:02	7/23/19 23:59	57	YES	57	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/23/19 23:59	7/24/19 6:30	391	YES	391	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/24/19 6:30	7/24/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/24/19 7:00	7/24/19 13:52	412	YES	412	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/24/19 13:52	7/24/19 13:55	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/24/19 13:55	7/24/19 13:58	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/24/19 13:59	7/24/19 14:30	31	YES	31	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/24/19 14:30	7/24/19 18:11	221	YES	221	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/29/19 14:07	7/29/19 14:30	23	YES	23	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	7/29/19 14:30	7/29/19 15:11	41	YES	41	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/9/19 7:58	8/9/19 9:54	116	YES	116	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/14/19 7:53	8/14/19 8:17	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/16/19 9:29	8/16/19 11:07	98	YES	98	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/16/19 12:12	8/16/19 14:25	133	YES	133	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/16/19 16:02	8/16/19 16:07	5	YES	5	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/24/19 23:32	8/25/19 0:52	80	YES	80	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	8/29/19 14:05	8/29/19 14:10	5	YES	5	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	9/1/19 20:49	9/1/19 21:31	41	YES	41	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/4/19 9:23	9/4/19 11:15	112	YES	112	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/8/19 21:56	9/8/19 22:59	63	YES	63	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/12/19 0:59	9/12/19 6:30	691	YES	691	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/12/19 6:30	9/12/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/12/19 7:00	9/12/19 14:30	450	YES	450	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/12/19 14:30	9/12/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/12/19 19:00	9/12/19 22:30	211	YES	211	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/12/19 22:30	9/12/19 23:24	54	YES	54	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/13/19 0:09	9/13/19 0:52	43	YES	43	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/13/19 2:02	9/13/19 5:25	203	YES	203	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/13/19 8:18	9/13/19 8:25	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/19/19 10:05	9/19/19 12:09	124	YES	124	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/25/19 15:42	9/25/19 19:00	197	YES	197	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/25/19 19:00	9/25/19 22:30	211	YES	211	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/25/19 22:30	9/26/19 0:40	130	YES	130	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/29/19 18:24	9/29/19 19:00	35	YES	35	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	9/29/19 19:00	9/29/19 19:06	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/5/19 8:41	7/5/19 9:02	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/5/19 9:54	7/5/19 10:21	27	YES	27	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	7/15/19 9:35	7/15/19 14:26	291	YES	291	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/16/19 7:25	7/16/19 7:34	9	YES	9	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/17/19 4:18	7/17/19 6:01	103	YES	103	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/17/19 12:01	7/17/19 14:30	149	YES	149	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/17/19 14:30	7/17/19 15:54	84	YES	84	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/17/19 16:09	7/17/19 17:31	82	YES	82	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/18/19 7:58	7/18/19 10:01	123	YES	123	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/18/19 10:05	7/18/19 10:07	1	YES	1	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	7/19/19 0:40	7/19/19 2:23	103	YES	103	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/13/19 22:57	8/13/19 23:59	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/14/19 17:59	8/15/19 6:30	741	YES	741	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/15/19 6:30	8/15/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/15/19 7:00	8/15/19 14:30	451	YES	451	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/15/19 14:30	8/15/19 16:25	115	YES	115	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/22/19 10:33	8/22/19 10:53	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/23/19 9:59	8/23/19 10:43	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/23/19 11:56	8/23/19 12:13	17	YES	17	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/26/19 13:06	8/26/19 13:13	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/26/19 13:18	8/26/19 13:24	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/28/19 0:42	8/28/19 6:30	348	YES	348	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	8/28/19 6:30	8/28/19 7:00	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/28/19 7:00	8/28/19 11:08	248	YES	248	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/30/19 7:54	8/30/19 9:02	68	YES	68	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/30/19 9:51	8/30/19 10:32	41	YES	41	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	8/30/19 10:32	8/30/19 10:35	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/10/19 3:30	9/10/19 3:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/11/19 12:59	9/11/19 17:59	300	YES	300	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/11/19 18:59	9/12/19 6:30	691	YES	691	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/12/19 6:30	9/12/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/12/19 7:00	9/12/19 12:31	331	YES	331	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/12/19 12:46	9/12/19 12:50	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/14/19 4:43	9/14/19 5:40	57	YES	57	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/14/19 17:01	9/14/19 17:12	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/15/19 14:09	9/15/19 14:30	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/19/19 18:52	9/19/19 19:00	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/19/19 19:00	9/19/19 19:25	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/20/19 12:10	9/20/19 14:30	140	YES	140	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/20/19 14:30	9/20/19 16:27	117	YES	117	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/24/19 5:43	9/24/19 6:02	19	YES	19	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	9/24/19 11:20	9/24/19 11:59	39	YES	39	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (minutes)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	7/2/19 7:19	7/2/19 11:03	223	YES	223	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/6/19 22:39	7/6/19 23:40	61	YES	61	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/9/19 10:08	7/9/19 10:09	1	YES	1	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/9/19 10:24	7/9/19 11:03	40	YES	40	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/9/19 12:16	7/9/19 12:24	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/10/19 6:52	7/10/19 6:59	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/10/19 9:59	7/10/19 13:59	240	YES	240	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/10/19 14:59	7/10/19 17:54	175	YES	175	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/14/19 21:46	7/14/19 22:30	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/14/19 22:30	7/15/19 2:06	216	YES	216	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/15/19 15:04	7/15/19 15:28	25	YES	25	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/17/19 14:44	7/17/19 14:50	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/19/19 3:21	7/19/19 3:49	28	YES	28	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/21/19 3:56	7/21/19 4:01	5	YES	5	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	7/26/19 22:41	7/26/19 22:45	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/5/19 8:26	8/5/19 8:28	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/5/19 8:29	8/5/19 8:32	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/10/19 15:22	8/10/19 15:29	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/13/19 21:57	8/13/19 22:59	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/14/19 9:59	8/14/19 14:30	271	YES	271	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	8/14/19 14:30	8/14/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/14/19 19:00	8/14/19 22:30	211	YES	211	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/15/19 0:45	8/15/19 0:47	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/15/19 12:20	8/15/19 12:30	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/17/19 12:27	8/17/19 12:30	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/19/19 20:46	8/19/19 22:30	104	YES	104	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/19/19 22:30	8/20/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/20/19 6:30	8/20/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/20/19 7:00	8/20/19 14:30	450	YES	450	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/20/19 14:30	8/20/19 16:47	137	YES	137	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/21/19 5:11	8/21/19 5:22	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/21/19 10:44	8/21/19 10:52	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/22/19 19:20	8/22/19 19:28	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	8/23/19 2:41	8/23/19 2:44	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/1/19 7:26	9/1/19 8:33	67	YES	67	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/10/19 4:31	9/10/19 4:59	28	YES	28	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/11/19 8:59	9/11/19 14:30	631	YES	631	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/11/19 14:30	9/11/19 19:00	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/11/19 19:00	9/11/19 22:30	210	YES	210	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/11/19 22:30	9/12/19 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	9/12/19 6:30	9/12/19 7:00	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/12/19 7:00	9/12/19 11:17	258	YES	258	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/13/19 10:55	9/13/19 11:07	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/15/19 16:58	9/15/19 17:25	27	YES	27	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/20/19 13:03	9/20/19 14:30	87	YES	87	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/20/19 14:30	9/20/19 16:57	148	YES	148	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/23/19 16:41	9/23/19 16:52	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/23/19 19:49	9/23/19 20:04	15	YES	15	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/23/19 16:41	9/23/19 16:52	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	9/23/19 19:49	9/23/19 20:04	15	YES	15	Bypass necessary to protect plant equipment.	N/A
				5k) Total duration of allowable monitor bypass:			**450**	**hours**	

COMS audits

Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								

Cylinder gas audit's (CGA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV103	2120	MR001	NOx	8/21/2019	Low 0.98% Mid 0.01%	Pass	12/31/2019	
SV118	2084	MR002	NOx	8/21/2019	Low 2.41% Mid 1.70%	Pass	12/31/2019	
SV127	2104	MR003	NOx	8/21/2019	Low 4.09% Mid 2.06%	Pass	12/31/2019	
SV144	2156	MR004	NOx	8/22/2019	Low 0.26% Mid 1.49%	Pass	12/31/2019	
SV151	2165	MR005	NOx	8/22/2019	Low 4.43% Mid 3.10%	Pass	12/31/2019	
SV103	2120	MR001	SO2	8/21/2019	Low 1.46% Mid 1.33%	Pass	12/31/2019	
SV118	2084	MR002	SO2	8/21/2019	Low 1.46% Mid 1.87%	Pass	12/31/2019	
SV127	2104	MR003	SO2	8/21/2019	Low 3.44% Mid 1.69%	Pass	12/31/2019	
SV144	2156	MR004	SO2	8/22/2019	Low 1.32% Mid 0.49%	Pass	12/31/2019	
SV151	2165	MR005	SO2	8/22/2019	Low 4.76% Mid 0.18%	Pass	12/31/2019	

Linearity

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A					Low Mid High			

Relative accuracy test audit (RATA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV103		MR001	SO2	5/15/2019	4.6%	Pass	2nd Qtr 2020	
SV103		MR001	NOx	5/15/2019	6.3%	Pass	2nd Qtr 2020	
SV118		MR002	SO2	5/16/2019	16.2%	Pass	2nd Qtr 2020	
SV118		MR002	NOx	5/16/2019	6.3%	Pass	2nd Qtr 2020	
SV127		MR003	SO2	5/20/2019	4.9%	Pass	2nd Qtr 2020	
SV127		MR003	NOx	5/20/2019	16.7%	Pass	2nd Qtr 2020	
SV144		MR004	SO2	5/22/2019	4.0%	Pass	2nd Qtr 2020	
SV144		MR004	NOx	5/22/2019	13.1%	Pass	2nd Qtr 2020	
SV151		MR005	SO2	5/21/2019	17.3%	Pass	2nd Qtr 2020	
SV151		MR005	NOx	5/21/2019	2.9%	Pass	2nd Qtr 2020	

6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Lawrence Sutherland
Signature of Responsible Official

Lawrence Sutherland
Printed Name of Responsible Official

General Manager - Minnesota Ore Operations
Title

OCT. 29, 2019
Date

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_3 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-1

Test Date: 8/21/2019

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	125.600	276.200
Cylinder No	CC154435	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	10:00	126.300	10:05	275.100
Run 2	10:13	126.600	10:17	277.200
Run 3	10:25	127.600	10:29	276.400
Avg Monitor Response		126.833		276.233
Calibration Error		0.98		0.01
Absolute Diff		1.233		0.033
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_3 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-1

Test Date: 8/21/2019

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	55.300
Cylinder No	CC154435	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	10:00	24.700	10:05	54.600
Run 2	10:13	25.100	10:17	54.700
Run 3	10:25	24.700	10:29	54.400
Avg Monitor Response		24.833		54.567
Calibration Error		1.46		1.33
Absolute Diff		0.367		0.733
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_4 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-2

Test Date: 8/21/2019

Tester:

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	125.600	276.200
Cylinder No	CC154435	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:04	123.400	11:08	271.900
Run 2	11:17	122.600	11:21	270.900
Run 3	11:29	121.700	11:33	271.700
Avg Monitor Response		122.567		271.500
Calibration Error		2.41		1.70
Absolute Diff		3.033		4.700
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_4 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-2

Test Date: 8/21/2019

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	55.300
Cylinder No	CC154435	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:04	26.400	11:08	56.900
Run 2	11:17	25.300	11:21	56.700
Run 3	11:29	25.000	11:33	55.400
Avg Monitor Response		25.567		56.333
Calibration Error		1.46		1.87
Absolute Diff		0.367		1.033
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_5 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-3

Test Date: 8/21/2019

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	125.600	276.200
Cylinder No	CC154435	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:49	131.300	11:53	281.700
Run 2	12:02	130.200	12:06	281.600
Run 3	12:15	130.700	12:19	282.400
Avg Monitor Response		130.733		281.900
Calibration Error		4.09		2.06
Absolute Diff		5.133		5.700
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_5 Audit Test Results

Mfr. & Model: AMETEK 920 S02 NOX

Serial Number: AX-920-9640-3

Test Date: 8/21/2019

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	55.300
Cylinder No	CC154435	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:49	25.900	11:53	55.800
Run 2	12:02	26.100	12:06	56.400
Run 3	12:15	26.200	12:19	56.500
Avg Monitor Response		26.067		56.233
Calibration Error		3.44		1.69
Absolute Diff		0.867		0.933
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_6 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-1

Test Date: 8/22/2019

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	126.400	277.400
Cylinder No	CC314177	CC206391
Expiration Date	3/18/2020	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	07:39	126.600	07:43	281.800
Run 2	07:52	126.900	07:56	281.500
Run 3	08:06	126.700	08:10	281.300
Avg Monitor Response		126.733		281.533
Calibration Error		0.26		1.49
Absolute Diff		0.333		4.133
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_6 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-1

Test Date: 8/22/2019

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	54.100
Cylinder No	CC314177	CC206391
Expiration Date	3/18/2020	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	07:39	24.900	07:43	53.900
Run 2	07:52	24.900	07:56	54.700
Run 3	08:06	24.800	08:10	54.500
Avg Monitor Response		24.867		54.367
Calibration Error		1.32		0.49
Absolute Diff		0.333		0.267
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_7 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-2

Test Date: 8/22/2019

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	126.400	277.400
Cylinder No	CC314177	CC206391
Expiration Date	3/18/2020	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	08:49	133.000	08:53	286.000
Run 2	09:02	131.000	09:06	285.000
Run 3	09:15	132.000	09:19	287.000
Avg Monitor Response		132.000		286.000
Calibration Error		4.43		3.10
Absolute Diff		5.600		8.600
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_7 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-2

Test Date: 8/22/2019

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	54.100
Cylinder No	CC314177	CC206391
Expiration Date	3/18/2020	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	08:49	24.000	08:53	54.000
Run 2	09:02	24.000	09:06	54.000
Run 3	09:15	24.000	09:19	54.000
Avg Monitor Response		24.000		54.000
Calibration Error		4.76		0.18
Absolute Diff		1.200		0.100
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

Summary Table by Monitor Downtime Type
U. S. Steel - Minntac
3rd Quarter 2019

NOx

Line	Duration (Hrs)	Description
Line 3	4	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	3	Excess Drift Primary Analyzer
	3	Primary Analyzer Malfunction
	0	Sample Interface Malfunction
Line 4	6	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	3	Primary Analyzer Malfunction
Line 5	3	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	5	Sample Interface Malfunction
	3	Primary Analyzer Malfunction
Line 6	5	Automatic Calibration
	0	Data Handling System Malfunction
	8	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	32	Primary Analyzer Malfunction
Line 7	8	Automatic Calibration
	0	Data Handling System Malfunction
	8	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	1	Primary Analyzer Malfunction
	0	Preventative Maintenance

SO2

Line	Duration (Hrs)	Description
Line 3	6	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	3	Excess Drift Primary Analyzer
	10	Sample Interface Malfunction
	3	Primary Analyzer Malfunction
Line 4	6	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	3	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 5	3	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	5	Sample Interface Malfunction
	3	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 6	6	Automatic Calibration
	0	Sample Interface Malfunction
	8	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	32	Primary Analyzer Malfunction
Line 7	16	Automatic Calibration
	0	Data Handling System Malfunction